DOCUMENT RESUME

ED 063 148 SE 013 740

AUTHOR Ditton, Robert B.
TITLE The Social and Economic Significance of Recreation Activities in the Marine Environment.
INSTITUTION Wisconsin Univ., Green Bay.
REPORT NO TR-11; WIS-SG-72-211
PUB DATE Jan 72
NOTE 14p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Economics; Environment; *Recreation; Research Reviews (Publications); *Social Influences
IDENTIFIERS *Coastal Zones

ABSTRACT

Although the data obtained by an Outdoor Recreation Resources Review Commission in 1960 indicated that 44 percent of participants in outdoor recreation prefer water-based activities, the potential demand for recreation within the coastal zone is much greater than that study indicates, because the unfulfilled recreational demands of the urban population were overlooked. At present, multiple-use management in all four United States coastal zones (Pacific, Gulf, Atlantic, and Great Lakes) is pot optimizing recreation potentials. This has resulted from a narrow view of recreation, adherence to unsuitable water-quality criteria, and the failure to assign adequate economic values to the recreational potential of pollution, chemical and biological contamination, energy, environmental action, total economic value of marine recreation from data on the sale and registration of boats, the expenditure on fishing equipment and the like, it has not, so far, been possible to partition these data according to region. Future research needs to be addressed to this problem in order to establish an adequate basis for the attainment of sustained recreational yield. (A classification of "coast-oriented outdoor recreation activities by environmental use" is included.) (AL)

ED 063148

Technical
Report
Number 11
1972

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

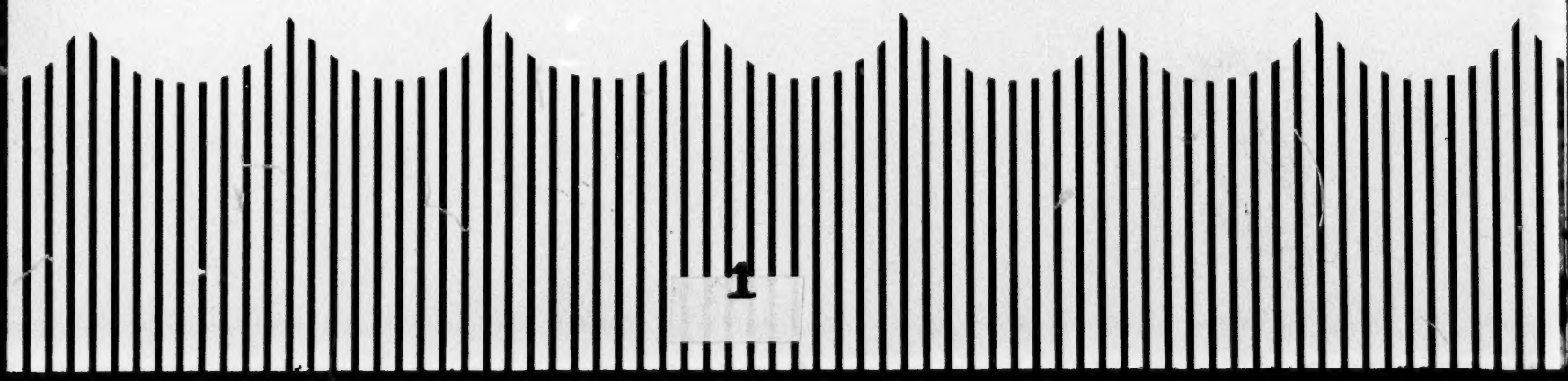
THE UNIVERSITY OF WISCONSIN SEA GRANT PROGRAM

THE SOCIAL and ECONOMIC SIGNIFICANCE of RECREATION ACTIVITIES in the MARINE ENVIRONMENT

ROBERT B. DITTON
Leisure Sciences Collateral
University of Wisconsin—Green Bay

January 1972
WIS-SG-72-211

SE 013 740



THE SOCIAL AND ECONOMIC SIGNIFICANCE OF RECREATION ACTIVITIES IN THE MARINE ENVIRONMENT

BY

ROBERT B. DITTON

ASSISTANT PROFESSOR

LEISURE SCIENCES COLLATERAL

UNIVERSITY OF WISCONSIN-GREEN BAY

JANUARY 1972

SEA GRANT TECHNICAL REPORT #11

WIS-SG-72-211

THE UNIVERSITY OF WISCONSIN SEA GRANT PROGRAM

This research is supported by the University of Wisconsin's Sea Grant Program, which is a part of the National Sea Grant Program, maintained by the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce.

SOCIAL AND ECONOMIC SIGNIFICANCE OF RECREATION ACTIVITIES IN THE MARINE ENVIRONMENT

INTRODUCTION

Man has had a long and close association with the sea. It has carried his commerce, brought food to his nets, diluted his wastes, and since World War II has been used increasingly for outdoor recreation. In fact, it has been generally recognized that recreation use is the most rapidly growing demand on water. Most of the recreational use of the marine environment takes place in the estuarine or coastal zone, a geographic area that extends seaward to the three-mile limit.

While many of the figures cited in the literature exclude any consideration of the Great Lakes and its coastal zone, such an oversight cannot be justified. The length of our fair shorelines reveals the surprising magnitude of our four coastal zones; 1) Pacific coastline--1,366 miles, 2) Gulf coastline--1,629 miles, 3) Atlantic coastline--1,888 miles and 4) Great Lakes coastline--8,345 miles.

Certain natural constraints such as weather and waves greatly restrict recreational use in marine areas outside the coastal zone. In their framework study planning, for example, the Great Lakes Basin Commission found that boating use on Lake Michigan remains largely within a five-mile radius of existing harbors of refuge. As a result, the U.S. Army Corps of Engineers expects to seek a distance of ten miles between their harbors of refuge in future planning on the Great Lakes.

RECREATION AND THE COASTAL ZONE

Why do Americans participate in outdoor recreation more than ever before? In addition to drastic changes in our life styles brought about by technology, we now recognize peoples' need to complement their work that cybernation has often made menial and unrewarding if not totally unnecessary. Many persons depend wholly upon their leisure (discretionary time) for the elements of satisfaction and self-fulfillment they used to derive from work. Now discretionary time is a fact of life with legal three day holidays, less than 40 hour work weeks, the four day 40 hour work week, longer and paid vacations, earlier retirements and the like.

Everyone will not have the same leisure needs nor will they have the same amount of leisure. There will be the unemployed; the low-salaried workers, among them moonlighters holding second jobs; workers with good income but employed less time and, of course, the professional, the highly skilled worker and the executive with much leisure literacy but little time to participate.[1]

Population growth is undeniably a leisure multiplier creating intensive pressures for further recreation resource development and utilization. Ten thousand years ago there were 5,000,000 people on the earth; today there are 3 1/2 billion. The world's population is doubling every 39 years with 30 percent of our present population 15 and under.

Demographers estimate that the U.S. population will approximately double by the year 2000 and 175 million people will be living in the coastal zone, including the Great Lakes. The Bureau of Outdoor Recreation (BOR) found, moreover, that increases in the demand for many types of outdoor recreation far outstrips population increases. Their studies revealed that there was a 12 percent increase in fishing, an 18 percent increase in boating and a 15 percent increase in swimming during the half decade from 1960-65, while the population increase was estimated at only 8 percent during that period. Between 1965 and 1980, swimming will increase 72 percent, while the population increases 29 percent.[1a] As a partial consequence of population growth, public recreation areas in the U.S. are "enjoying" a 10 to 12 percent annual increase in use.

In addition to increases in leisure and population, increased mobility and per capita disposable income are seen as being related to increased participation in water recreation. However, Moore notes that these accepted factors do not fully explain this pattern of increasing recreation behavior:

> The same trends might have led to rapid expansion along hundreds of quite different lines, all of which are equally open to consumers. Why water recreation? The social psychologists, the anthropologists, or the sociologists may someday explain it. Perhaps it is an adaptation of our frontier traditions to the conditions of modern life. It may be a reflection of a deep-seated desire for some activity in which the whole family can join. To some extent, it may be a flight from urban living, or even from the new suburbs, to a more direct contact with nature. Water-centered recreation is often associated with less congestion and regimentation. Perhaps the tactile sensations-direct immersion in air, water, and sunshine with less screening from clothing-explain its appeal to many.[2]

The Outdoor Recreation Resources Review Commission (ORRRC) revealed 1) which factors are most relevant in projecting future participation in outdoor recreation and which factors may be disregarded and 2) the approximate magnitude of influence of these factors on participation. Using multiple classification analysis, income, education, occupation, length of paid vacation, race, age, life cycle station, region, and place of residence only explained about 28 percent of the variance in the activity scale for men and 29 percent for women. With greater refinement of participation measurement, we can expect to explain a greater proportion of the variance.[3]

Studies conducted by ORRRC in 1960 revealed that 44 percent of outdoor recreation participants favored water-based recreation activities over any others, and that an additional substantial percentage favored water-related activities.

What is also not revealed in this much overworked percentage is the unfulfilled demands of people in and near urban areas for water-based recreation who for lack of opportunity, facilities, leisure or money are not able to so participate. To further complicate this unfulfilled demand as a result of 300 years of unrestrained exploitation, much of our coastal zone adjacent to urban areas is humanly unacceptable for water recreation use even for those who are able to participate.

The diversity of the Pacific coastline creates the potential for a wide variety of recreational activities (Table 1). Analysis of participation undertaken by ORRRC made it clear that factors other than socio-economic characteristics are major determinants of outdoor recreation activity. A number of environmental variables affect recreation participation at particular locations over alternative locations.

Environmental variables, accessibility (distance, time, costs) and attractability have received considerably more attention than any of the other environmental variables even though the operational definitions of these variables have varied widely. These two variables together are however accepted as predictors of participation for short-term projections.[4] In terms of accessibility, Johnson and Pankey in their California Reservoir Study concluded that increases in an adjacent population will result in a nearly proportional increase in water-based recreation use.[5] The extent of recreation facilities and the quantity of water available, have been equated with attractability and found to be significant factors affecting participation in a particular location.

TABLE 1

Table 1-Classification of Coast-oriented Outdoor Recreation Activities by Environmental Use[6]

1. Activities using nearshore waters:
   a. Ocean Sailing
   b. Ocean power boating
   c. Surfing
   d. Swimming

2. Activities using fauna and flora of nearshore waters:
   a. Ocean fishing
   b. Shore fishing
   c. Scuba and snorkel spear fishing
   d. Scuba and snorkel biological observation
   e. Scuba and snorkel shellfish collecting

3. Activities using rocky, gravel and mud tidelands:
   a. Biological observation

4. Activities using fauna and flora of rocky, gravel, and mud tidelands:
   a. Wildfowl hunting
   b. Shellfish collecting
   c. Biological observation
   d. Shore fishing

5. Activities using sandy tidelands:
   a. Beaching (includes sunbathing, beachcombing)
   b. Clamming
   c. Horseback riding

6. Activities using flora and fauna of sandy tidelands:
   a. Biological observation (especially shorebirds)

7. Activities using sand dunes and above-water beaches:
   a. Beaching (includes sunbathing, beachcombing, picnicking, etc.)
   b. Dunebuggies
   c. Camping
   d. Recreational housing
   e. Horseback riding

8. Activities using flora and fauna of sand dunes and above-water beaches:
   a. Biological research and observation

9. Activities using coastal marsh and its flora and fauna:
   a. Biological observation
   b. Wildfowl hunting

10. Activities using coastal strand and brushfields and its flora and fauna:
    a. Hiking
    b. Horseback riding
    c. Camping
    d. Recreational housing
    e. Recreational driving
    f. Biological observation

Other environmental variables that are pertinent to prediction of recreational utilization include transportation systems, regional physiography, climate, competing opportunities and saturation.

In recognition of the socio-economic determinants of recreation participation and the environmental uniqueness of the Pacific coastal zone, we can expect that recreational use will continue to grow to a point where a number of our non-renewable coastal resources will be in danger of being consumed. The critical task is therefore one of matching recreational activities with their particular environmental impacts to the carrying capacity of the region's ccastal resource (recognizing participation and population growth trends). In the planning literature, this process is referred to as user-resource recreation planning.

It is paradoxical that as a nation, we are witnessing a recreation explosion; and at the same time, our effective supply of water resources needed to support leisure activity is diminishing in both quantity and quality. This collision course will continue until more attention is paid to some of the constraints on future recreational use of water, namely: 1) water pollution, 2) lack of legal access and 3) conflicting water uses. In short-sighted manner, these constraints have received far less attention in the literature than the prediction of recreation demand as well as recreation's economic impact.

It is generally recognized that multiple-use management in our four coastal zones has not optimized recreation potentials. In fact recreation has been traditionally squeezed out by other preemptive uses. Lower Green Bay in Wisconsin present an excellent case study of where a recreational use has been eliminated by conflicting uses. A designated beach facility was closed at this location in the late 1930's. Today, swimming and other body contact water recreation activities are still "strongly discouraged" by public health officials at this location due to excessively high fecal coliform bacteria counts among other things.

Displacement of recreational uses such as the above cited example can be attributed to: 1) our compliance with water quality criteria that have been tied to a narrow and parochial view of recreation and 2) our inability to adequately price the recreational value (primary as well as economic impacts benefits) of specific marine regions.

RECREATION RE-DEFINED

Water quality criteria for water-based recreation as promulgated by the federal government are most inadequate.[7] This can be partially attributed to the conceptual view of recreation held by many resource planners, namely, that recreation is simply an activity engaged in during free time. Such oversimplification has led to water recreation being considered a very tolerant water use within multiple-use planning, e.g., "If you have water and it passes public health and safety requirements, then you can expect

people to swim in it." Recreation must come to be viewed as an experience that is freely engaged in largely during leisure, from which an individual derives some satisfaction. Unfortunately, the satisfaction or qualitative component is all but lacking in many of today's leisure experiences just as it is absent in evaluative criteria used to judge the adequacy of our recreation planning and development efforts. Attendance data are hardly a substitute for knowing that people engaged in recreation in the coastal zone are indeed engaged in recreative experiences. An analysis of participant satisfaction is needed to supplement attendance to determine the adequacy of our recreation resources as well as goods and services.

In the past, the area of esthetics was ignored or considered separate from recreation in natural resource planning. Today it is generally recognized that esthetics is reflected in peoples' attitudes and beliefs, both of which shape the extent and location of peoples' water-recreation behavior. It is hypothesized that man during his leisure views the quality of specific waterbodies in a much different manner than does the chemist or sanitary engineer responsible for physical, biological, and chemical monitoring processes.[8]

He reacts to certain water quality characteristics that are beyond physical and biological measurement but are within the domain of the social scientist. In the coastal zone, there is a need to know what water quality characteristics are the most critical to specific water recreation user groups, e.g. swimmers, boaters, pleasure boaters, etc. for their experiences to be satisfying. There is an urgency in this task as the recreational potentials of the marine environment will be further leveled if we do not identify the critical environmental parameters and correspondingly the levels of acceptance important to people.

ECONOMICS OF COASTAL ZONE RECREATION

In the economic realm, we find that no one in the thirties could predict the value of swimming and other recreational uses of Green Bay before they were eliminated. Without such a value established, little apparently was lost. While we still have no accurate economic valuations for the Bay, other large waterbodies or a particular segment of coastal zone, what do we know about the economics of water recreation pertinent to the Pacific coastal zone:

1. First of all, Bigler estimated that, in 1968, approximately 112 million people participated in a total of 7.1 billion ocean-oriented recreation occasions and spent about $14 billion. To place this figure in better perspective, it is pointed out that consumer expenditures were approximately $3.7 billion from sole petroleum and natural gas products from off-shore sources in 1968 and $1.5 billion in retail value of the 1968 domestic fish catch.[9]

2. Breaking this down by recreation pursuit instead of specific location, we know that the Boating Industry Association has calculated that 3 billion 292 million dollars was spent nationwide in retail sales during 1969 for new and used boats, motors, accessories, maintenance, storage, etc.[10]

3. From U.S. Coast Guard data, we know that there were 393,338 boats registered in California, or 8.1 percent of those registered nationwide.[11] Just as we don't know how many of these boats are used primarily in the coastal zone and how often, we also are unaware of the percentage of non-resident boaters that use the coastal zone.

4. We know that the Los Angeles - Long Beach area was one of the top ten metropolitan markets for outboard motors in 1969 with 6,600 units sold in 1969 while there were a total of 151,000 motors in use in this area.[12]

5. We know that a U.S. Bureau of Sports Fisheries study calculated that 8,305,000 salt water anglers (12 years and over) spent $800 million during 1965. This meant an expenditure of $96/person with an average expenditure of $8.34/day.[13]

What we don't know is the total economic value associated with recreational use of specific marine regions, for example, the West Coast estuarine zone, Lake Michigan, the Gulf Coast, etc. Attempts have been made to arrive at these comprehensive values but they are not without critical deficiencies. Proxy values for a user day of recreation have been determined by the federal government in U.S. Senate Document #97, Supplement No. 1.[14] These proxy values range from $.50 to $1.50 and have been applied to the population of all coastal counties (excluding the Great Lakes). From such an analysis, it has been estimated that the total recreational value of the coastal zone is about $300 million if each person participates 5 days annually.[15] Aside from the evident weaknesses in terms of participation rates, such an estimate ignores all the non-residents attracted to the coastal zone as well as the multiplier values of economic impact. As such the $300 million estimate should only be regarded as a minimum-valuation point.

Until we are able to evaluate the <u>total</u> value of recreational use in each coastal zone, recreation will <u>not</u> receive the same close attention as do other uses in public resource management decision-making. The implications for water quality management, given the current water quality criteria for recreation, alone are devastating. Without such a total value, state and local agencies also find it difficult to justify any diversion of planning and development funds from other forms of recreation to the coastal zone. Instead of being assumed as important as we presently do, the economic value of recreation in the coastal zone needs to be reliably established if we are to sustain this unique environment as well as meet future recreation demands.

A FUTURE VIEW

Future use of the marine environment for recreation depends upon our ability 1) to protect those areas already designated and/or used for recreation and 2) to rejuvenate those areas where recreational uses are presently impaired.

In areas of degraded water quality, water recreation can be further eliminated by other competing and conflicting uses, or indeed recreation development can become a substantial pressure for alleviating degraded conditions. Any intentions in this regard, however, depend heavility upon the formulation of water quality standards relevant to our humanistic re-definition of recreation.

Elsewhere where water quality is not a problem, recreational utilization and development should be encourage--but not at any price. We can no longer pursue the short-range improvement of human existence at the expense of long-range environmental repercussions that eventually return to man. In increasing the recreational utilization of the marine environment, we must through ecologically-sensitive technology and user-resource planning avoid the disasters wrought on many of our inland lake recreation resources. This includes filling, peripheral development, and accelerated eutrophication. The marine environment with its unique weather constraints is seen as an ideal safety valve for many of our 100,000 inland recreation lakes that have reached the saturation point in recreational development and use and are diminishing in quality.

In conclusion, individuals, adjacent shoreland owners, businessmen, polluters, etc. must begin to assume implicit responsibility for the sustained yield of our coastal zones if society is to realize the full social and economic significance of recreational activities in the marine environment. While SUSTAINED YIELD is a socio-economic concept promulgated by foresters concerned with a perpetual production of high-quality timber resources, resource managers have since recognized that it has application to all of our renewable and non-renewable resources. Because of the undeniable relationship of leisure man and environment, sustained yield can and should be conceptually applied in the recreational development of the marine environment--our goals being a continuous availability of satisfying water recreation experiences while sustaining the often non-renewable natural coastal zone ecosystem.

FOOTNOTES

1 D.N. Michael, Cybernation: The Silent Conquest, A Report to the Center for the Study of Democratic Institutions, (Santa Barbara, California: Center for the Study of Democratic Institutions, 1962), pp. 29-33.

1a U. S. Bureau of Outdoor Recreation. Outdoor Recreation Trends (Washington, D.C.:U. S. Government Printing Office, 1967) pp. 20-24.

2 A.L. Moore, "The Rise of Reservoir Recreation,"Economic Studies of Outdoor Recreation, ORRRC Study Report 24(Washington,D.C.: U. S. Government Printing Office, 1962), p. 24.

3 U. S. Outdoor Recreation Resources Review Commission, Participation in Outdoor Recreation: Factors Affecting Demand Among American Adults(Washington, D.C.: U. S. Government Printing Office, 1962), p. 27.

4 F.J. Cesario, Jr., "Appendix Q...Recreation,"Final Report on Dynamic Model of the Economy of the Susquehanna River Basin, H. R. Hamilton et al. (Columbus, Ohio; Batelle Memorial Institute, 1966), p. Q-31.

5 W.E. Johnston and V.S. Pankey, "Use Prediction Models for Corps of Engineers Reservoirs in California, An Economic Study of the Demand for Outdoor Recreation" (San Francisco, California; Cooperative Regional Research Technical Committee, 1968),p.36.

6 Association of Bay Area Governments. Ocean Coastline Study. Supplemental Report 1S-5(Berkeley, California: Association of Bay Area Governments, 1970), p.50.

6a National Advisory Council on Regional Recreation Planning, A User-Resource Recreation Planning Method (Loomis, California: National Advisory Council on Regional Recreation Planning, 1959).

7 E.H. Storey and R.B. Ditton, "Water Quality Requirements for Recreation", Water Quality Improvement by Physical and Chemical Processes, E.F. Gloyna and W.W. Eckenfelder(eds.) (Austin, Texas: University of Texas Press, 1970).

8 This hypothesis along with pertinent water quality requirements of recreation user groups are being investigated under funding by the University of Wisconsin Sea Grant Program through the Office of Sea Grant Programs, National Oceanic and Atmospheric Administration U. S. Department of Commerce: R.B. Ditton and T. Goodale, The Marine Recreational Uses of Green Bay: A Survey of Human Behavior and Attitude Patterns,FY 70 and 71.

9 E. Winslow and A.B. Bigler, "A New Perspective on Recreational Use of the Ocean," Under Sea Technology (July, 1969), p.51.

10 Boating Industry Association, "Boating, 1969, A Statistical Report on America's Top Family Sport" (Chicago, Illinois: Boating Industry Association, 1969), p.3.

11 U.S. Coast Guard, Boating Statistics, 1969, CG-357, (Washington, D.C.:U. S. Government Printing Office, 1970), pp. 19-20.

12 Boating Industry Association, p.6.

13 U. S. Bureau of Sport Fisheries and Wildlife. National Survey of Fishing and Hunting. Resource Publication 27 (Washington, D.C.:U.S. Government Printing Office, 1965), p. 12,44,46.

14 U.S. Senate. Evaluation Standards for Primary Outdoor Recreation Benefits, Senate Document No. 97, Supplement No. 1 (Washington, D.C.:U.S. Government Printing Office, 1964),p.4.

15 U.S. Senate, The National Estuarine Study, Report of the Secretary of the Interior to the United States Congress, Senate Document No. 91-58 (Washington, D.C.:U.S. Government Printing Office, 1970), pp. 152-155.

OTHER SOURCES

California State Water Quality Control Board. Water Quality Criteria, Publication No. 3-A. Sacramento, California: Resources Agency of California, State water Quality Control Board, 1963.

Devanney, Professor J.W. III, Derbis, E., Seifert, Prof. W. and Wood, W. Economic Factors in the Development of a Coastal Zone, Report No. MITSG 71-1. Cambridge, Massachusettes: Sea Grant Project Office, Massachusettes Institute of Technology, November 20, 1970.

Ditton, Robert B. Water-Based Recreation: Supply and Demand Considerations - An Interdiscplinary Bibliography. Monticello, Illinois: National Council of Planning Librarians, 1970.

_____. The Identification and Critical Analysis of Selected Literature Dealing with the Recreational Aspects of Water Resources Use, Planning and Development. Urbana,Illinois: Water Resources Center, University of Illinois.

Marsh, John S. Marine Parks: An Annotated Bibliography. Monticello, Illinois; National Council of Planning Librarians, 1971.

Miloy, John and Copp, E. Anthony. Economic Impact Analysis of Texas Marine Resources and Industries. College Station, Texas; Texas Engineering Experiment Station, Texas A & M University, June, 1970.

U.S. Outdoor Recreation Resources Review Commission. The Quality of Outdoor Recreation; As Evidenced by User Satisfaction, ORRRC Study Report 5. Washington, D.C.; U.S. Government Printing Office.

_____. Shoreline Recreation Resources of the United States. ORRRC Study Report 4. Washington, D.C.; U.S. Government Printing Office, 1962.

_____. Economic Studies of Outdoor Recreation. ORRRC Study Report 24, Washington, D.C.: U.S. Government Printing Office, 1962.

_____. Water for Recreation-Values and Opportunities, ORRRC Study Report 10. Washington, D.C.; U.S. Government Printing Office, 1962.

Willeke, Gene E. Effects of Water Pollution in San Francisco Bay. Report EEP-29. Stanford, California: Program in Engineering-Economic Planning, Stanford University, 1968.